U.S. Forest Service
RESEARCH NOTE

CENTRAL STATES FOREST EXPERIMENT STATION
COLUMBUS, OHIO R. D. LANE, DIRECTOR

INTERMOUNTAIN STATION
Central Reference File
No. 0,73

CS-5 April 1963

SPINDLE GUARD MAKES SHAPER SAFER, MORE EFFICIENT

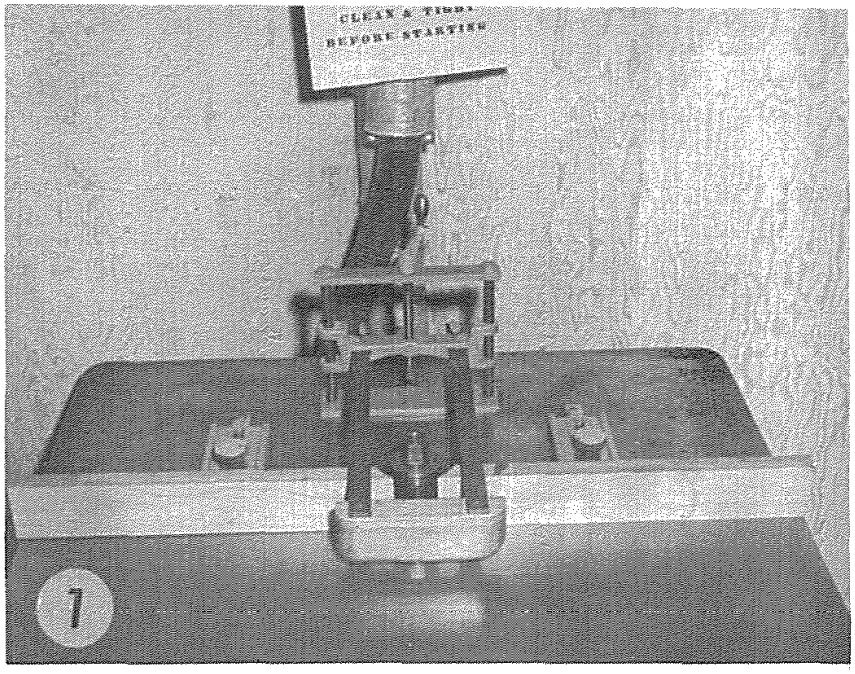
When machining wood on a single-spindle shaper it is desirable to have the cutterhead guarded. An appropriate guard will keep the operator's hands away from the shaper knives and will contain the knives should they break or come loose from the head.

We designed a guard for use on straight-line shaping jobs, such as tonguing, grooving, and rabbeting, on a Porter, Model 203, single-spindle shaper equipped with a fence and holddown (fig. 1). The guard is a 2-part steel enclosure (fig. 2) that is fully adjustable vertically and horizontally. A top hood fits over a bottom hood and, with the adjustable fence, they enclose the cutterhead except at the working point of the knives (fig. 3).

The top hood moves vertically with the adjustable holddown bars and horizontally from the fence to the holddown support. It is secured in position by tightening thumb screws against the holddown bars (fig. 4). Adjustable slides on either side of the top hood are held by wing nuts and can be moved to close the gap between the hood and the fence. On top of the hood there is a collar to which a flexible chip exhaust or dust-collection pipe can be attached. The guard can be adjusted without disconnecting the pipe.

The bottom hood of the guard is the same height as the fence, but is shorter than the top hood so that the top overhangs the fence when the bottom is set tight against the fence. The bottom hood is screwed to the shaper bed through slotted flanges (fig. 5) which allow adjustments in the fence position and also permit the hood to be pushed back out of the way while changing knives.

CENTRAL FILE COPY



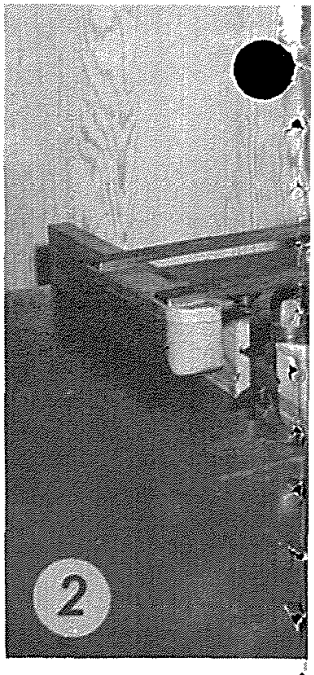


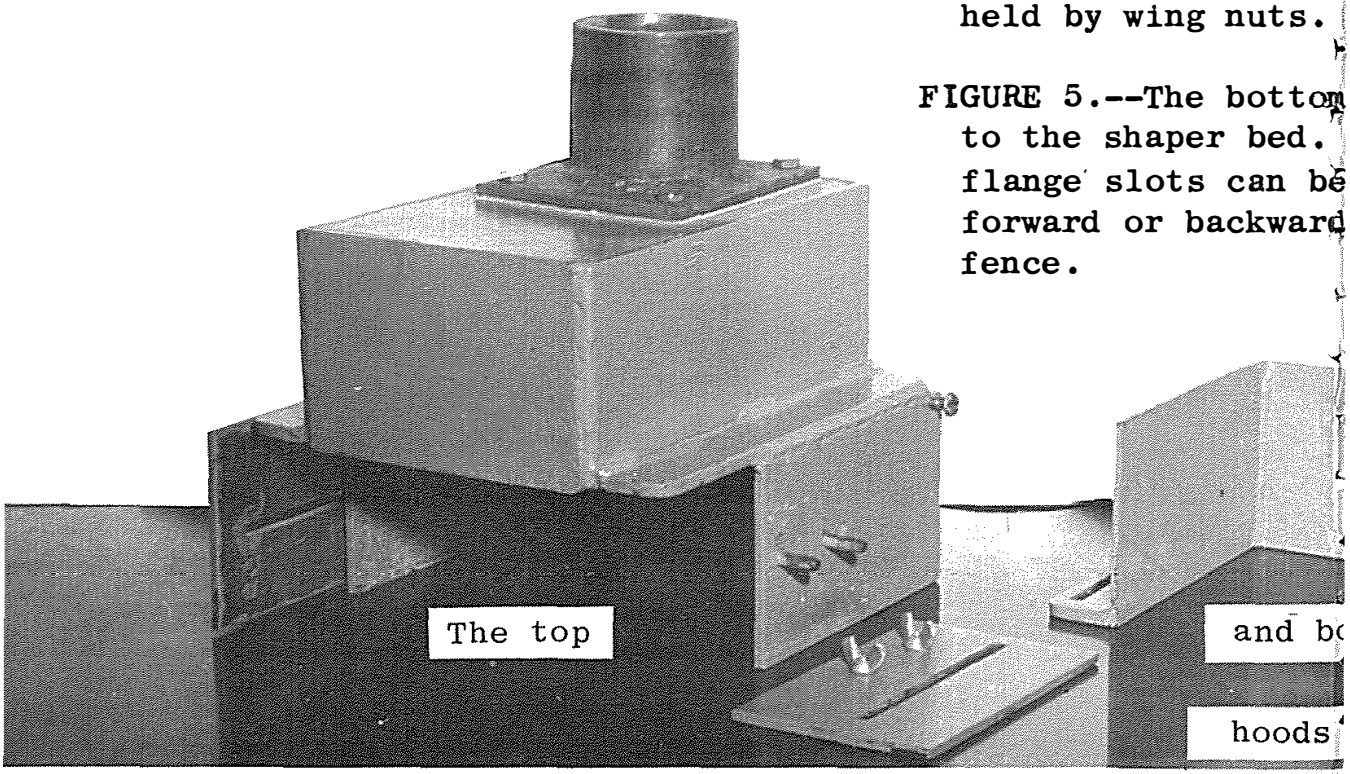
FIGURE 1.--The Porter, Model 203, single-spindle sh
adjustable holddown bar and straight-line shaping

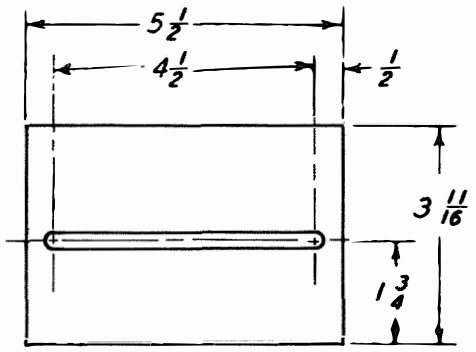
FIGURE 2.--Exploded view of the guard with the fen
hood raised, and the bottom hood pushed back.

FIGURE 3.--Guard in closed, operating position. Ad
gaps. The guard does not interfere with normal s
operations with either hand or power feeding.

FIGURE 4.--The top ho
on the adjustable h
tighten the guard t
The slides on the s
held by wing nuts.

FIGURE 5.--The bottom
to the shaper bed.
flange slots can be
forward or backward
fence.

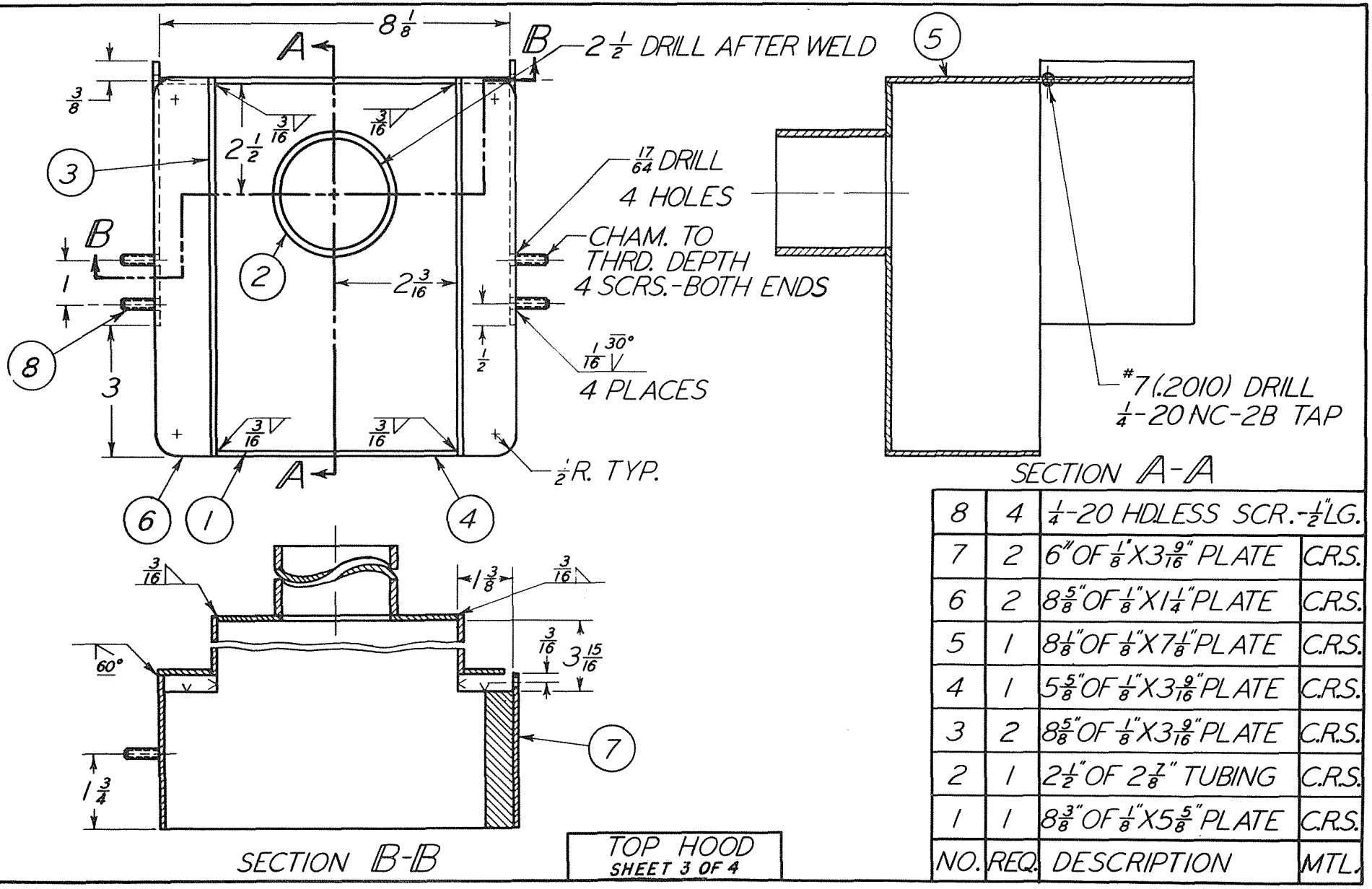




2 REQUIRED

SLOT IS 17/64 WIDE

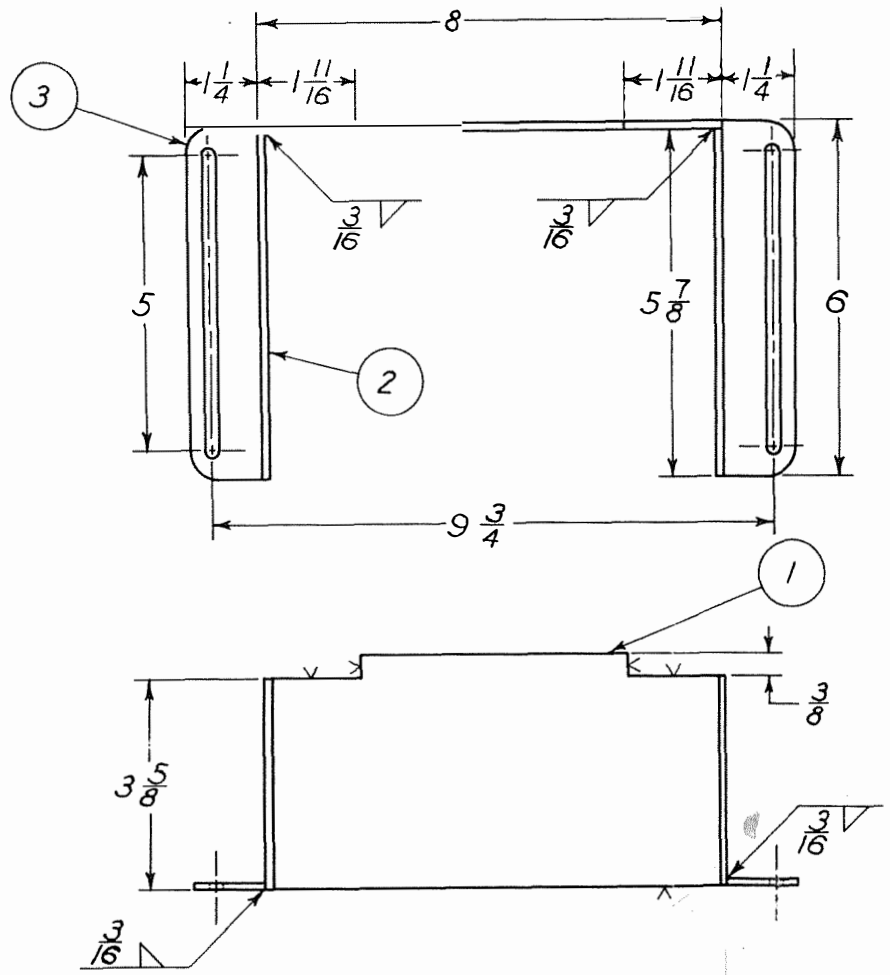
SLIDE
SHEET 4 OF 4



NO.	REQ.	DESCRIPTION	MTL.
8	4	1/4-20 HDLESS SCR.-1/2" LG.	
7	2	6" OF 1/8" X 3 9/16" PLATE	C.R.S.
6	2	8 5/8" OF 1/8" X 1 1/4" PLATE	C.R.S.
5	1	8 1/8" OF 1/8" X 7 1/8" PLATE	C.R.S.
4	1	5 5/8" OF 1/8" X 3 9/16" PLATE	C.R.S.
3	2	8 5/8" OF 1/8" X 3 9/16" PLATE	C.R.S.
2	1	2 1/2" OF 2 7/8" TUBING	C.R.S.
1	1	8 3/8" OF 1/8" X 5 5/8" PLATE	C.R.S.

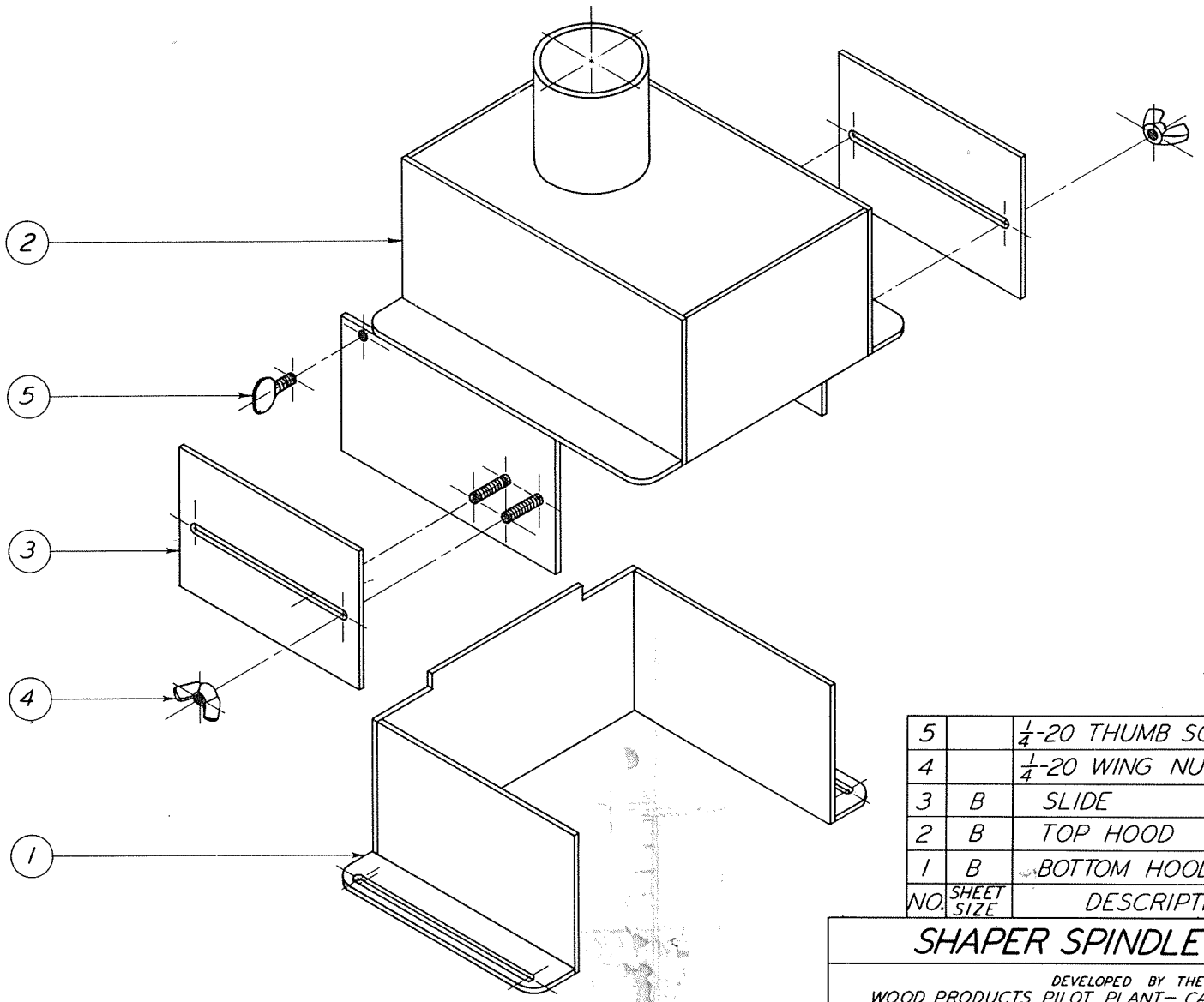
TOP HOOD
SHEET 3 OF 4

NO.	REQ.	DESCRIPTION	MAT'L.
1	1	8" OF $\frac{1}{8}$" X 4" PLATE	C.R.S.
2	2	$5\frac{7}{8}$" OF $\frac{1}{8}$" X $3\frac{5}{8}$" PLATE	C.R.S.
3	2	6" OF $\frac{1}{8}$" X $1\frac{1}{4}$" PLATE	C.R.S.



BOTTOM HOOD

SHEET [illegible] OF 4



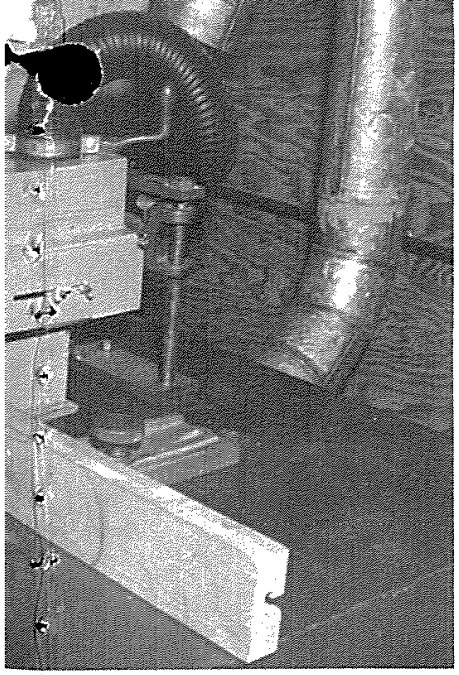
ASSEMBLY & DET. S - 1/4 SCALE

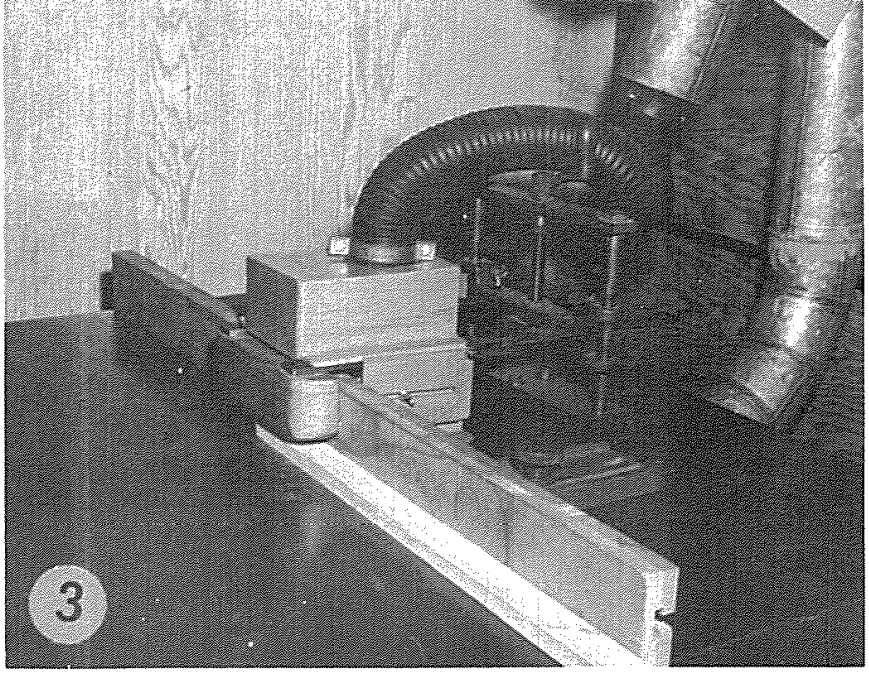
NO.	SHEET SIZE	DESCRIPTION	REQ.	MAT'L.
5		1/4-20 THUMB SCREW-1/2 LG.	2	PURCH.
4		1/4-20 WING NUT	4	PURCH.
3	B	SLIDE	1	C.R.S.
2	B	TOP HOOD	1	C.R.S.
1	B	BOTTOM HOOD	1	C.R.S.

SHAPER SPINDLE GUARD

DEVELOPED BY THE
WOOD PRODUCTS PILOT PLANT— CARBONDALE RESEARCH CENTER, CENTRAL STATES FOREST EXPERIMENT STATION, U.S. FOREST SERVICE, & SOUTHERN ILLINOIS UNIVERSITY.

DECEMBER, 1962 | DESIGNED BY G.A.C. & S.H.B. | DRAWN BY R.C.U.



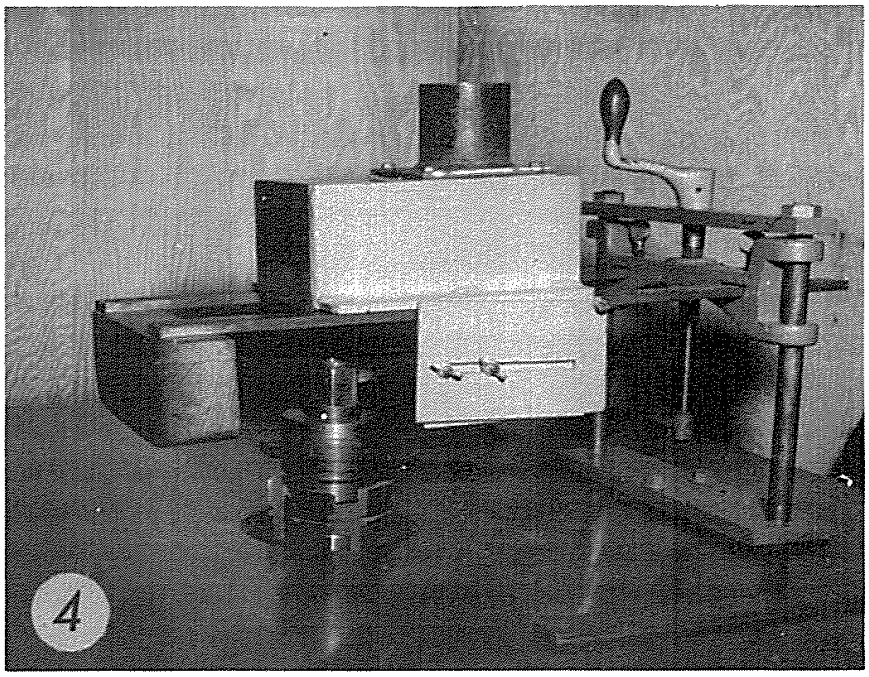


equipped with an
e.

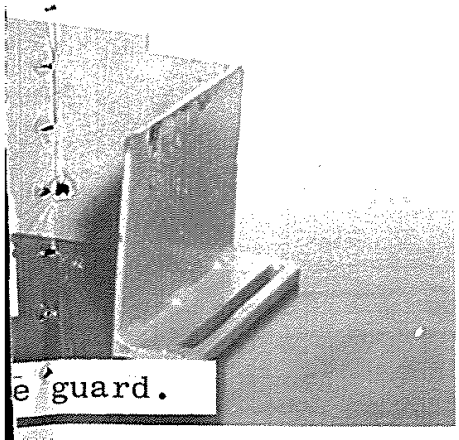
place, the top

ble slides close
-line shaping

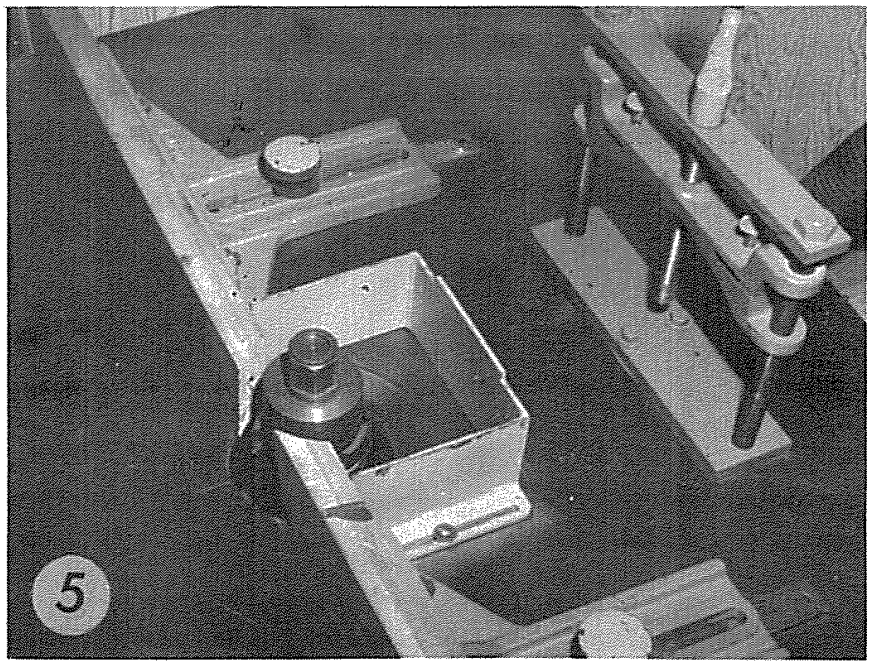
the guard mounted
wn. Thumb screws
holddown bars.
of the hood are



of the guard screwed
machine screws in the
ened to move the guard
adjustments in the



e guard.



Although the guard shown in the accompanying plan is designed for the Porter, Model 203, shaper, it can easily be modified to fit any single-spindle shaper equipped with an adjustable holddown and fence. The guard must provide adequate clearance for anticipated vertical adjustments of the shaper spindle and must enclose, with clearance, the maximum cutting circle expected. This can be done by modifying the length and width of the parts. Care must be taken to fit the guard parts to the holddown bars and the fence, but no other dimensions are critical to fitting the machine. Two holes must be drilled and tapped in the shaper table to anchor the bottom hood. No other modifications of the shaper, holddown, or fence are required.

Parts for this inexpensive guard can be cut to length and welded together in about 2 hours by one man with cutting and welding equipment. In addition, about 2 man-hours are required for fitting, drilling, painting, and installation. All hardware is standard and readily available.

This guard not only protects.the machine operator but also diverts the chips into the exhaust system thereby keeping the table free of waste material. Several benefits can result--fewer accidents, fewer rejects, and less maintenance cost--all of which can mean a saving in labor and material.

Glenn A. Cooper,
forest products technologist
Carbondale, Illinois (field
office maintained in cooperation
with Southern Illinois University)